TERRA

16 channels transmodulator

S2C16

Vers. 1.01

USER'S MANUAL

S2C16 - SAT to QAM transmodulator

1. Product description

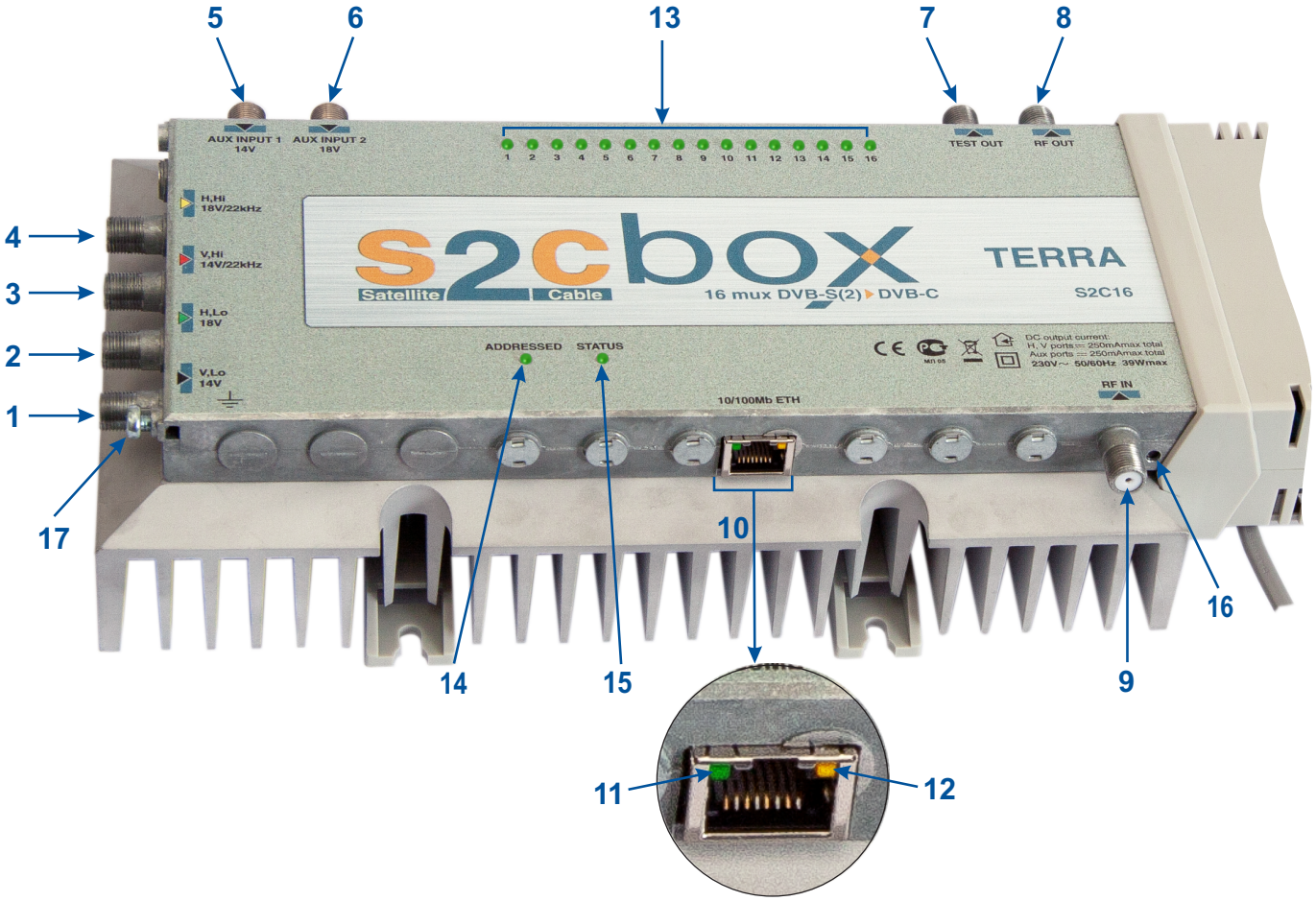
S2C16 is a 16 channel transmodulator with DVB-S/S2 input and DVB-C output. It has 4 main and 2 auxiliary RF inputs for connecting SAT signal. Integrated RF multiswitch allows to connect any channel to any SAT port. Demodulated transport stream comes to processor, which filters services, modifies SI (Service Information), generates NIT (Network Information table), LCN (Local Channel Number), restamps PCR (Program Clock Reference). Then transport stream goes to 16 QAM modulators, which produces 16 independent DVB-C RF signals.
Transmodulator can be used as a stand alone device.
The product is intended for indoor usage only.

2. Safety instructions

Installation of the transmodulator must be done according IEC60728-11 and national safety standards.
Transmodulator is powered from mains 230 V~. This voltage is dangerous to life.
Any repairs must be done by a qualified personnel only.
To avoid the electric shock follow these instructions:

- Do not plug transmodulator into the mains supply if the power cord or plug is damaged.
- To disconnect the transmodulator from the mains completely, disconnect plug from mains socket.
- The mains socket must be easily accessible.
- The transmodulator shall not be exposed to dripping or splashing water and no objects filled with liquids, such as vases, shall be placed on it.
- Avoid placing device next to the central heating components and in areas of high humidity.
- No naked flame sources, such as lighted candles, should be placed on transmodulator.
- If the device has been kept in cold conditions for a long time, keep it in a warm room no less than 2 hours before plugging into the mains.
- Do not insert any objects into ventilation openings.
- The ventilation should not be impeded by covering the transmodulator with items, such as newspapers, table-cloths, curtains.
- Mount the transmodulator on not flammable wall or in not flammable installation box in vertical position with power supply located on the right.

3. External view



Picture 1. External view of the module

1. **V, Lo** - vertical Lo band SAT input. +13 V output to LNB can be supplied from this connector.
2. **H, Lo** - horizontal Lo band SAT input. +18 V output to LNB can be supplied from this connector.
3. **V, Hi** - vertical Hi band / DiSEqC SAT input. +13 V/22 kHz output to LNB can be supplied from this connector.
4. **H, Hi** - horizontal Hi band / DiSEqC SAT input. +18 V/22 kHz output to LNB can be supplied from this connector.
5. **AUX INPUT1** - auxiliary 1 SAT input. +13 V output to LNB can be supplied from this connector. This port can be accessible from 9th -16th demodulators only.
6. **AUX INPUT2** - auxiliary 2 SAT input. +18 V output to LNB can be supplied from this connector. This port can be accessible from 9th -16th demodulators only.
7. **TEST OUT** - RF test output. This is -20 dB RF output signal of transmodulator (without loop through RF input) for testing.

8. **RF OUT** - RF output.

9. **RF IN** - RF loop through input. An output of another transmodulator can be connected here.

10. **10/100 Mb ETH** - Ethernet control port.

11. Ethernet link indicator. Green LED indicates valid Ethernet link.

12. Ethernet activity indicator, yellow LED.

13. Startup progress and channel status indicators:

    1. Indicate the progress of startup when the device is powered on or firmware upgrade is going on.

    2. Each indicator indicate channel status when the device is up and running:

       Does not glow when the channel is completely inactive.

       Glows yellow if either demodulator or modulator is active, but not both.

       Glows green if demodulator and modulator are active and there are no any errors related to channel processing.

       Glows red if demodulator and modulator are active and any error appeares in channel processing.

14. **ADDRESSED** - addressing indicator. It blinks on when the device is being accesed via control panel.

15. **STATUS** - error indicator. Red light indicates, that at least one error exists at the moment.

16. Reset button. Intended for two functions:

    1. Press this button at operating time to restart the device.

    2. Restore default IP address and admin's password. Press the button when the device is turned off. Keep it pressed and plug the powering on. Release the button **not earlier** than yellow LEDs (13) will start light on. After that default IP address and default admin's pasword will be restored. All the rest parameters will be unchanged and device will keep operating as previously was set up.

17. Functional grounding clamp.

4. Specifications

Number of transponders		16		
SAT ports	frequency range pr.	(950 - 2150 MHz)		
	input level/impedance	45-85 dBμV/75 Ω*		
	LNB powering and control pr.	V, Lo	0 V / 13 V	250 mA max. total
		H, Lo	0 V / 18 V	
		V, Hi	0 V / 13 V 22 kHz or DiSEqC	
		H, Hi	0 V / 18 V 22 kHz or DiSEqC	
		Aux 1	0 V / 13 V	250 mA max. total
		Aux 2	0 V / 18 V	
	modulation	**DVB-S demodulator (QPSK)**		**DVB-S2 demodulator (QPSK, 8PSK)**
	symbol rate	2 ÷ 45 MS/s		2 ÷ 45 MS/s (QPSK), 2 ÷ 31.5 MS/s (8PSK)
	code rate	1/2, 2/3, 3/4, 5/6, 7/8		QPSK 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 8PSK 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
	roll off	35 %		20 %, 25 %, 35 %
	signal processing	ETS 300 421		ETS 302 307
RF output	frequency range pr.	48 - 858 MHz, by step 100 kHz		
	RF channel allocation	independent from other channels		
	output level per carrier/impedance pr.	max. 90 dBμV/75 Ω		
	total output level adjustment pr.	15 dB by 0.5 dB step		
	carrier output level adjustment pr.	+3 dB...-3 dB by 0.5 dB step		
	MER	≥ 43 dB		
	constellation pr.	QAM16, QAM32, QAM64, QAM128, QAM256		
	channel bandwidth / symbol rate pr.	4...8.3 MHz / 3.5 ÷ 7.2 MS/s		
	return loss	≥ 14 dB		
	roll off	15 %		
	signal processing	EN 300 429, ITU-T J.83 A (Annex A)		
	loop through (RF IN) frequency range	45-862 MHz		
	loop through (RF IN) loss	3 dB		
	test point (directional)	-20 dB		
Input data rate		max. 90 Mbps per transponder		
Supply voltage limit values		190-250 V~ 50/60 Hz		
Power consumption**		up to 29 W		
Operating temperature range		-10° ÷ +50° C		
Dimensions/Weight (packed)		373x135x69 mm / 2.8 kg		

Management port	10/100 Base-T Ethernet
Default IP address	192.168.1.10
Default login information	Username: admin Password: admin

pr. software control

* recommended level imbalance between inputs < 10 dB

** without external DC load; with maximal external DC load up to 39 W

5. Installation instructions

Read the safety instruction first.
Installation of system according standard IEC60728-11 ensures safety of personnel and prevents apparatus against damaging due to lightning or other sources of overvoltage surges.
If any RF connector on the transmodulator is not used, connect the 75 Ω load supplied.
Connect power plug of transmodulator to the mains when functional grounding and RF cables are connected correctly.

6. Operation

Power on the device. Yellow LEDs (13) will light on from the left to the right one by one. It indicates powering on progress. When powering on is finished, device will run according to the latest used configuration. LEDs will indicate the status of each channel. The led is turned off when particular demodulator and RF output is disabled. Green LEDs (13) indicates, that whole channel path is active, no errors detected. Red LEDs (13) indicates an error in the channel. Yellow LEDs indicates, that either demodulator or modulator is activated and the full path is configured not properly.
Device monitores PMT (Program Map Table) and CAT (Conditional Access Tables) of every active service constantly and updates transport stream parameters to the output if any changes detected, for ex: new PIDs (Packet Identifier) detected or removed. So the end-equipment should detect any changes of transport stream automatically as well. The exception is very rare situation, when the same PMT PID is shared between several services. In this case, PMT monitoring is disabled for these services.

7. Control panel

Device can be controlled using any web browser. The exception is Internet Explorer, which must be 10.0 version or higher. Default IP address of device is 192.168.1.10, so it can be accessed at url **http://192.168.1.10/**. Login window will appear on the website (Picture 2.)

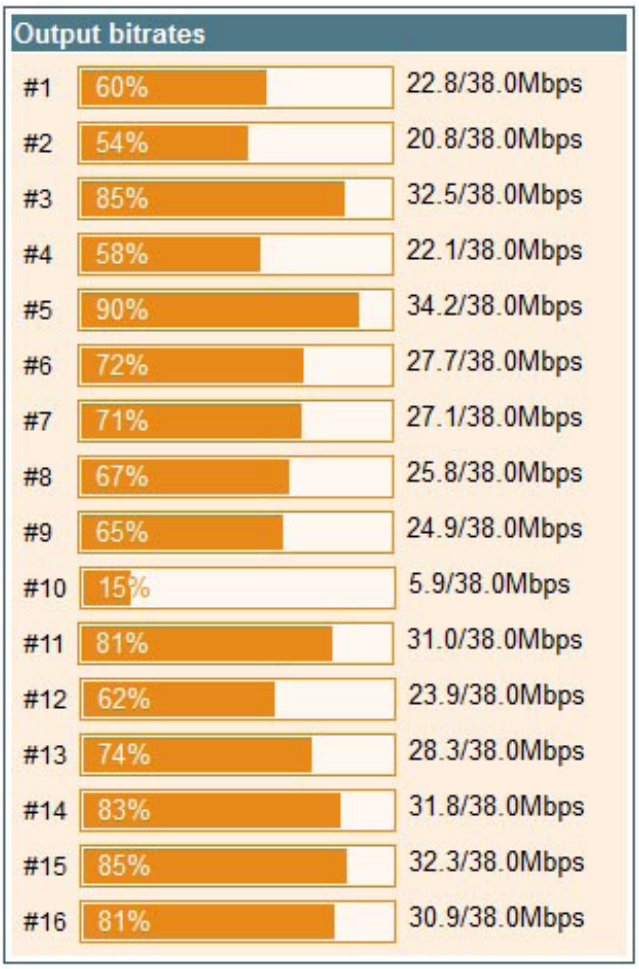
Picture 2. Login window

Default username and password are admin/admin. Press „Login“ button to open control panel. Main page of device control panel will appear. Each tab on page top controls separate section of parameters. „System menu“ can be opened by moving a mouse over the menu. To open any other control window, click on the tab on this control window.

7.1. Main

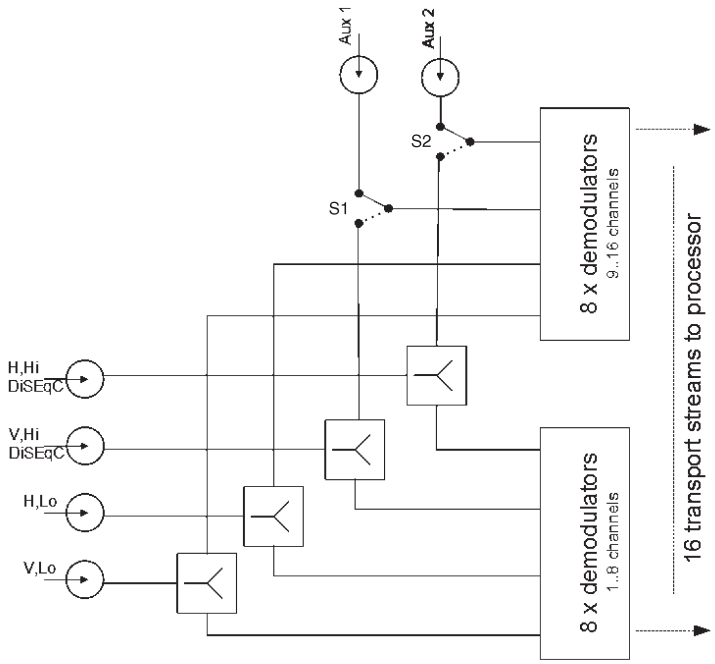
„Device information“ table shows main device information – serial number, device model, software version, etc. Parameter „Title“ can be changed by pressing „Change“ button. This title will be displayed as a browser title and will be seen on the right top side of the browser.
„Output bitrates“ table shows the output bitrate status of each channel in real time (Picture 3.). Horizontal bar shows percentage of used available bandwidth of the channel. The 1st number right to the bar shows actual bitrate in Mbps. Next number shows maximum allowed bitrate in the channel and it depends on modulation parameters. Ensure, that maximum actual bitrate would not reach more than 95% of available bandwidth. Otherwise bitrate overflow may occur.
„Diagnostic information“ table shows actual errors.

„Temperature measurement“ table shows temperature of several points of the device – demodulator, modulator and internal temperature. Ensure, that none of these temperatures would reach 90°C degree. Otherwise output quality parameters may get worse. Reaching 110°C may damage the device.



Picture 3. Output bitrates

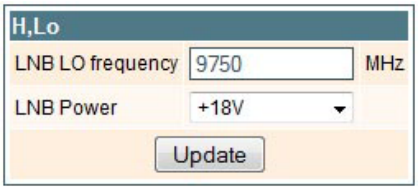
7.2. LNB Settings



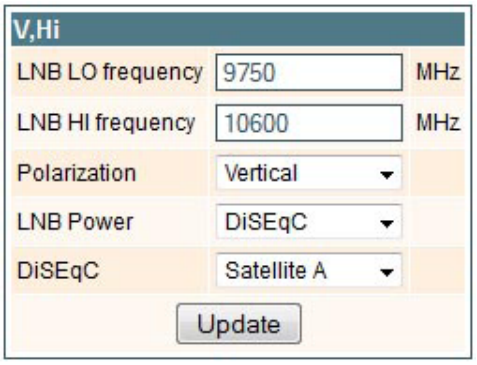
Picture 4. Structure of SAT inputs

Picture 4 shows internal structure of satellite inputs. Each SAT port has individual settings, where a power supply can be switched on/off, LNB Lo/Hi frequency or DiSEqC parameters set up:

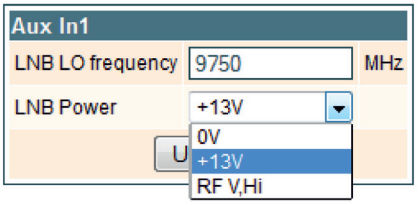
V, Lo: 0 V or +13 V;
H, Lo: 0 V or +18 V, see picture 5.
V, Hi: 0 V or +13 V 22 kHz. This port supports DiSEqC as well, see picture 6.
H, Hi: 0 V or +18 V 22 kHz. This port supports DiSEqC as well;
Aux In1: 0 V or +13 V. When Aux In1 LNB power is set to „RF V,Hi“, this port is disabled, see pictures 4, 7.
Aux In2: 0 V or +18 V. When Aux In2 LNB power is set to „RF H,Hi“, this port is disabled.



Picture 5: LNB power setup window



Picture 6: LNB DiSEqC parameters setup window



Picture 7: LNB power setup of AUX inputs

RF signal from Aux In1 and Aux In2 ports can be connected to 9-16th demodulators only or be disabled. When Aux In1 LNB power is set to 0V or +13V, switch S1 connects Aux In1 port to 9-16th demodulators and connects DC 0V or +13V for LNB. When Aux In1 LNB power is set to „RF V,Hi“, switch S1 connects 9-16th demodulators from port Aux In1 to port V,Hi, disconnecting DC from this port, see picture 4.

Summary output current for LNB from ports V,Lo, V,Hi, H,Lo, H,Hi is up to 250 mA independing from Aux In1, Aux In2 settings.
Summary output current for LNB from ports Aux In1, Aux In2 is up to 250 mA independing from another ports settings.

7.3 RF inputs

16 demodulators can be set up in this section. See picture 8. „SAT input“ parameter can switch demodulator off or connect to any available RF input. Demodulators 1-8th can connect only to V,Lo/H,Lo/V,Hi/H,Hi inputs.
Depending on „Aux In/LNB Power“ parameter of „LNB Settings“ section, in case of „SAT input“ 3rd and 4th selection, demodulators 9-16th will be connected either to V,Hi/ H,Hi or to Aux In1/2 ports.
„Input frequency“ parameter is a frequency of transponder in MHz. Ensure, that SAT IF frequency ($FR_{transponder}$ - LNB Lo/Hi) fits into demodulator's input frequency range.

In case of DiSEqC, device will try (if possible) to automatically select Lo or Hi frequency to fit into the IF frequency range.
„Symbol rate“ parameter is a symbol rate of transponder in kSym/s.
„Modulation standard“ allows to select modulation type of DVB-S or DVB-S2.
Press „Update“ button to set new parameters.
There are various status parameters of input signal right to the „Update“ button. „Lock status“ can have following values:

- „Inactive“, when the input channel (demodulator) is turned off;
- „Locked“, when demodulator is locked to the transponder;
- „Unlocked“, when demodulator is unlocked. This state generates error in diagnostic window as well. If the channel is not used, it’s recommended to turn it off instead of leaving unlocked. It will save power consumption. „RF level“ and „SNR“ (Signal Noise Ratio) are measured parameters of input signal. „Bitrate“ is the transport stream’s bitrate of the transponder. PER (Packet Error Ratio) shows the ratio of invalid received packets and total received packet. A sign „<“ before the value means, that there was no any errors within that number of packets. To reset PER counters, simply click onto the PER value.

	SAT input	Input frequency	Symbol rate	Modulation standard		Lock status	RF level	SNR	Bitrate	PER
Input 1:	H,Lo	10744	22000	DVB-S	Update	Locked	56.6 dBµV	14.1 dB	33.7 Mbps	<2.0E-8
Input 2:	H,Lo	10773	22000	DVB-S2	Update	Locked	57.0 dBµV	13.6 dB	47.8 Mbps	<2.0E-7
Input 3:	H,Lo	10803	22000	DVB-S2	Update	Locked	57.3 dBµV	15.3 dB	47.8 Mbps	<1.8E-7
Input 4:	H,Lo	10832	22000	DVB-S2	Update	Locked	58.6 dBµV	14.5 dB	42.5 Mbps	<1.3E-7
Input 5:	H,Lo	10862	22000	DVB-S	Update	Locked	57.2 dBµV	14.9 dB	35.4 Mbps	<1.9E-8
Input 6:	H,Lo	10891	22000	DVB-S2	Update	Locked	60.1 dBµV	15.3 dB	42.6 Mbps	<1.3E-7
Input 7:	H,Lo	10921	22000	DVB-S	Update	Locked	59.5 dBµV	15.4 dB	35.4 Mbps	<1.9E-8
Input 8:	H,Lo	10964	22000	DVB-S2	Update	Locked	58.2 dBµV	16.6 dB	42.5 Mbps	<1.4E-7
Input 9:	H,Lo	11836	27500	DVB-S	Update	Locked	57.8 dBµV	13.6 dB	38.0 Mbps	<1.9E-8
Input 10:	H,Lo	11023	22000	DVB-S	Update	Locked	61.1 dBµV	15.9 dB	33.7 Mbps	<2.0E-8
Input 11:	H,Lo	11053	22000	DVB-S2	Update	Locked	58.8 dBµV	15.7 dB	42.6 Mbps	<1.3E-7
Input 12:	H,Lo	11082	22000	DVB-S2	Update	Locked	60.3 dBµV	14.6 dB	47.9 Mbps	<1.8E-7
Input 13:	H,Lo	11362	22000	DVB-S2	Update	Locked	59.3 dBµV	15.0 dB	42.5 Mbps	<1.3E-7
Input 14:	H,Lo	11244	22000	DVB-S	Update	Locked	59.4 dBµV	15.7 dB	33.7 Mbps	<2.0E-8
Input 15:	H,Lo	11273	22000	DVB-S2	Update	Locked	56.7 dBµV	15.2 dB	42.5 Mbps	<1.3E-7
Input 16:	H,Lo	11303	22000	DVB-S2	Update	Locked	58.5 dBµV	15.0 dB	42.6 Mbps	<1.3E-7

Picture 8: RF inputs

7.4 RF outputs

	Constellation	Symbol rate	Output frequency, MHz (Channel)		RF level, dB	Enable
Output 1	QAM-64	6875	100.0	-	+3	☑
Output 2	QAM-64	6875	482.0	C22	+3	☑
Output 3	QAM-64	6875	490.0	C23	+3	☑
Output 4	QAM-64	6875	498.0	C24	+3	☑
Output 5	QAM-64	6875	506.0	C25	0	☑
Output 6	QAM-64	6875	514.0	C26	0	☑
Output 7	QAM-64	6875	522.0	C27	0	☑
Output 8	QAM-64	6875	530.0	C28	0	☑
Output 9	QAM-64	6875	538.0	C29	0	☑
Output 10	QAM-64	6875	546.0	C30	0	☑
Output 11	QAM-64	6875	554.0	C31	0	☑
Output 12	QAM-64	6875	562.0	C32	0	☑
Output 13	QAM-64	6875	570.0	C33	0	☑
Output 14	QAM-64	6875	578.0	C34	0	☑
Output 15	QAM-64	6875	586.0	C35	0	☑
Output 16	QAM-64	6875	800.5	-	0	☑
Attenuator					15.0	

Update

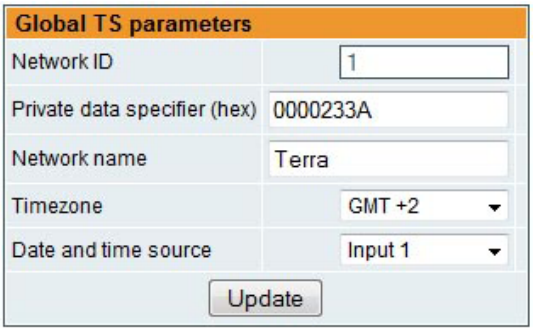
Select all ☐

Picture 9: RF outputs

16 independent QAM modulators can be setup in this section. There is no requirement for channels to be adjacent or sorted by frequency. See picture 8. Each channel can have own constallation QAM-16/32/64/128/256, symbol rate 3500..7200 Mbps. Note, that symbol rates higher than 6956 kSym/s will exceed 8 MHz bandwidth, so these symbol rates should be used carefully.
„Output frequency“ parameter can be entered manually or selected as a channel from combobox. Only C21(474 MHz)...C69 (858 MHz) can be selected from the list. If you need any other frequency – just add it manually. Frequency step is 0.1 MHz.
RF level for each channel can be adjusted in a range of -3...+3 dB. „Enable“ checkbox will enable channel to the output. Global attenuator can be entered up to 15 dB.
Press „Update“ to change settings. In case, if any modulation parameter was changed, whole 16 modulators will be restarted with new settings. Exceptions are „RF level“ and „Attenuator“. Changes in these parameters will not restart the modulator.

7.5 TS outputs

Several tables related to NIT generation exist in this section. „Global TS parameters“ (picture 10) describes following TS parameters:



Picture 10: Global TS parameters

- Network ID is unique within the geographical region defined by the “country_code”. For a cable network, usually this is a single country code plus 0x2000 (8192). If there are more modulators in the network, they must have the same Network ID.
Proper value depending on your country and operator can be found here:
http://www.dvbservices.com/identifiers/network_id?page=1
- Private data specifier (in hex format) can be inserted in the NIT table for proper LCN description. This value is described in TS 101162 specification. NorDig standard requires 00 00 00 29 value, UK should use 00 00 23 3A value. Other options can be found here:
http://www.dvbservices.com/identifiers/private_data_spec_id?page=1
The parameter will not be inserted into NIT if value is set to zero.
- „Network name“ is the name of the network.
- „Timezone“ parameter is used for proper time records in logs. It has no effect to broadcast.
- „Date and time source“ is a channel for a source of time. It is used for proper time records in logs and has no effect to broadcast. All original TDT/TOT (Time Data Table/ Time Offset Table) PID 20 pass directly from demodulators to each output without modification.
The 2nd table in the page describes Transport stream ID and Original network ID of each channel (see picture 11). Each stream in a network must have unique ID, called „Transport stream ID“. An Original_Network_ID is defined as the “unique identifier of a network”. It can be linked to NetworkID or used value from this location:
http://www.dvbservices.com/identifiers/original_network_id?page=1

	RF output parameters	Original network ID	Transport stream ID
Output 1	C21, QAM-64, SR:6875	1	1
Output 2	C22, QAM-64, SR:6875	1	2
Output 3	C23, QAM-64, SR:6875	1	3
Output 4	C24, QAM-64, SR:6875	1	4
Output 5	C25, QAM-64, SR:6875	1	5
Output 6	C26, QAM-64, SR:6875	1	6
Output 7	C27, QAM-64, SR:6875	1	7
Output 8	C28, QAM-64, SR:6875	1	8
Output 9	C29, QAM-64, SR:6875	1	9
Output 10	C30, QAM-64, SR:6875	1	10
Output 11	C31, QAM-64, SR:6875	1	11
Output 12	C32, QAM-64, SR:6875	1	12
Output 13	C33, QAM-64, SR:6875	1	13
Output 14	C34, QAM-64, SR:6875	1	14
Output 15	C35, QAM-64, SR:6875	1	15
Output 16	C36, QAM-64, SR:6875	1	16

Update

Picture 11: Transport stream and original network IDs

Very important part in this page is the 3rd table (picture 12), where other streams in the network can be described.

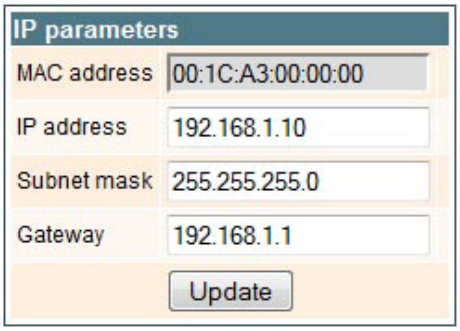
Description of other streams in the network					
Frequency, MHz	Constellation	Symbol rate	Original network ID	Transport stream ID	
114.0	QAM-64	6875	1	17	Edit Remove
122.0	QAM-64	6875	1	18	Edit Remove
	QAM-16				Add
Load information from other device			IP address:		Load

Picture 12: Description of other streams in the network

Every channel in the network must be described in NIT. Otherwise TV automatic channel tuning function will not find all channels. So, if there are more modulators in the network, all channels must be included in this table. If there are more devices manufactured by Terra, which are controlled via Ethernet, all broadcast information can be captured automatically by adding it's IP address and pressing „Load" button. In case if the same frequency was added already, that record will be updated. Otherwise, a new record will be inserted.

7.6 IP parameters

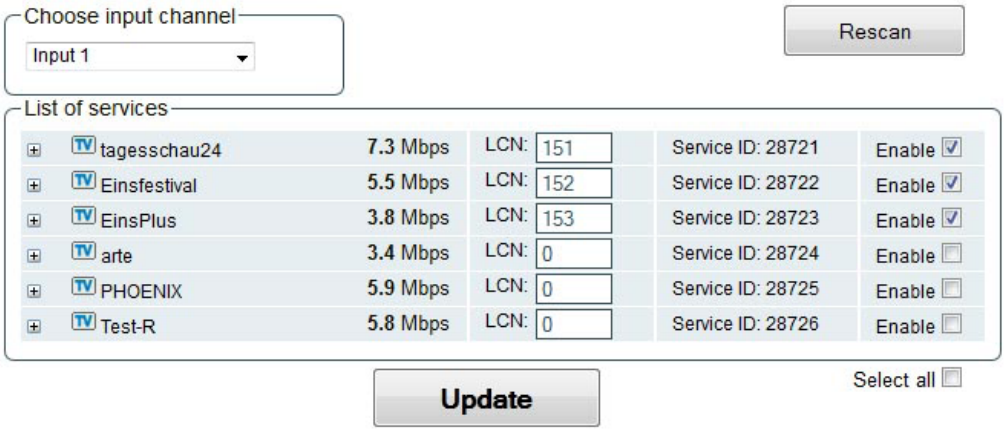
All device IP settings can be setup here – IP address, subnet mask, gateway (see picture 13). Parameters will be updated immediately after pressing „update" button and redirect to new location.



Picture 13: IP parameters

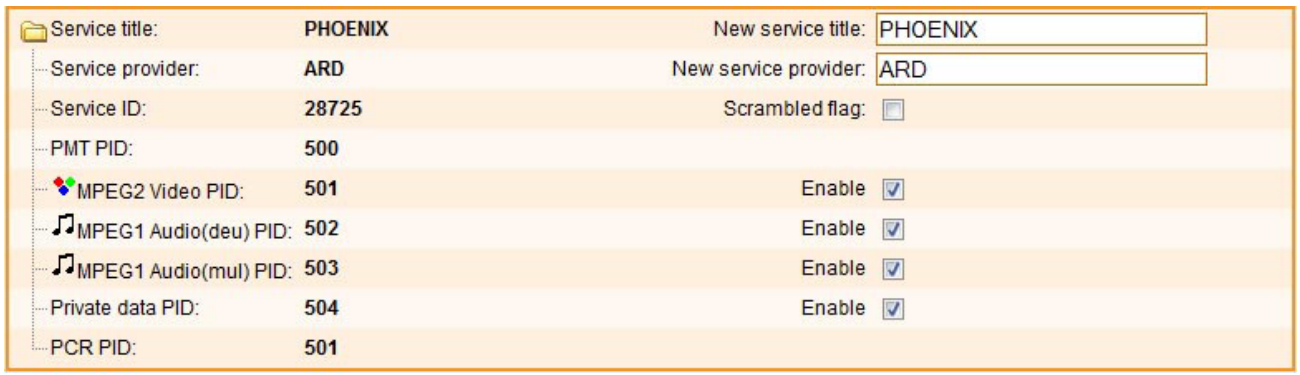
7.7 Services

One channel at a time can be setup in this page. Select proper channel from the list at „Choose input channel“ combobox (see picture 14).


Choose input channel
Input 1
Rescan
List of services
tagesschau24 7.3 Mbps LCN: 151 Service ID: 28721 Enable
Einsfestival 5.5 Mbps LCN: 152 Service ID: 28722 Enable
EinsPlus 3.8 Mbps LCN: 153 Service ID: 28723 Enable
arte 3.4 Mbps LCN: 0 Service ID: 28724 Enable
PHOENIX 5.9 Mbps LCN: 0 Service ID: 28725 Enable
Test-R 5.8 Mbps LCN: 0 Service ID: 28726 Enable
Select all
Update

Picture 14: Services

A list of scanned services of selected channel will appear. „Rescan“ button will load all service information of that channel. „List of services“ table shows a list of available services. Icon before the service name indicates service type. Bitrate of each service is measured in real time. „LCN“ field is a Logical Channel Number. Every service can have a „channel number“ and TV will sort channels according to it. Just ensure, that all services in all channels have different numbers. Value 0 means, that LCN for that service is not used at all and TV will sort these channels according to it’s own rules. If channel numbers are added, but TV does not recognize it, check the following:
- If TV supports LCN?
- If Network ID and Original Network ID values are valid for the country, which is selected on TV?
„Enable“ checkbox enables the service to the output.
Press onto „+“ sign and service information will be extended (see picture 15).



Picture 15: Service details

Service title and provider can be edited (multilanguage character support). „Scrambled flag“ will be inserted into SDT (Service Description Table). Unchecking this checkbox will not descramble the content. It only carries information about the scrambling status of the service.
Individual streams can be disabled as well.
Press onto „Update“ button to save changes and execute.

7.8 System menu

This menu tab contains following submenu items: “Event logs”, “Export parameters”, “Import parameters”, “Firmware upgrade”, “User management”, “ Restore defaults “, “ Reset the device “, “Language”. Mouse over to show the list of this submenu.

7.8.1 Event logs

Various important events, errors, warnings will be logged into the system (see picture 16).

Date/Time	Event type	Event description
2014-09-11 09:46:17	Event	PMT version change detected with PID=301 on channel 15
2014-09-11 09:46:17	Event	Stream PID=2212 removed from service ID=13221 on channel 14
2014-09-11 09:46:17	Event	Old PMT version =2, New version =27
2014-09-11 09:46:17	Event	System time updated
2007-01-01 00:00:08	Event	Starting up...

Picture 16: Event logs

Each record has an event type, which can be used to filter particular messages. Just select checkboxes in the „Logs filtering“ table and press „apply“. Other messages will be hidden.
„Erase logs“ button will erase all logs from the system.
Each record has a log time when the event appeared. Device has internal clock and it’s value is updated from the transport stream. Timezone takes effect there, which can be setup at „TS output/Timezone“.

7.8.2 Export parameters

All settings of transmodulator can be exported for backup or copying to another device. Press “Export parameters” and “parameters.xml” file will be downloaded to PC. This file can be imported only to the same type of device.

7.8.3 Import parameters

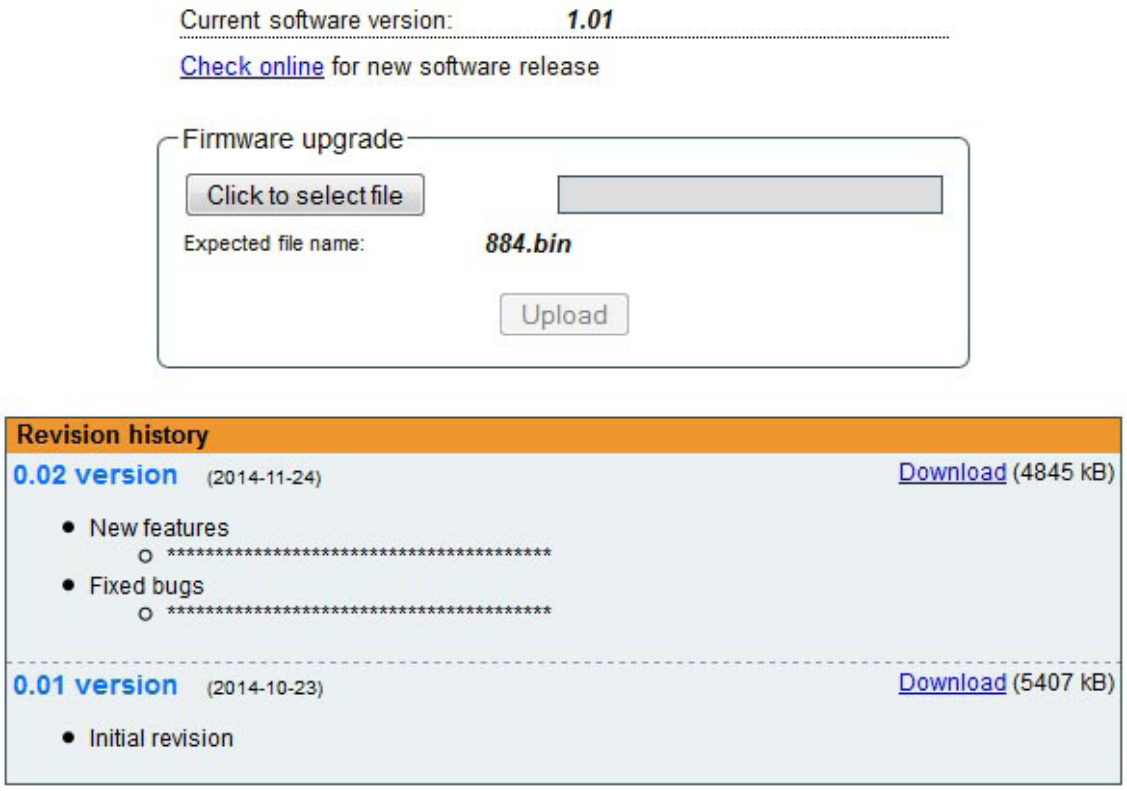
Exported parameters can be imported back to the device. Press onto “Click to select file” button (see picture 17) to select exported file.

Picture 17: Import parameters

Press “Upload” button to send the file to the device. Several seconds will take to update all parameters after file upload. After that, device will start to work with new configuration. No restart requires.

7.8.4 Firmware upgrade

Device firmware can be upgraded via web browser. Press onto “Click to select file” button and select firmware binary file. If valid file was selected, a version number of new firmware will be displayed. Otherwise an error message will appear. Press “Upload” button to upload new firmware to the device. Upload progress bar will appear and may take about a minute or more, depending on the size of a file and a network connection speed. A message will be displayed asking to restart the device when the file was sent to the device. New firmware will be programmed into the device only after restart. Red indicators of the device will light on left to right and then back right to left indicating the progress of programming. It may take additional minute or more to finish the process. Device will startup with a new firmware and continue to operate with previous parameters. Additional new firmware features (if any) may need to setup additionally to take affect.
Avoid power supply interruption when a programming process is going on.
Device has possibility to load software revision history and check availability for new software release. Click onto “Check online” link. If computer (not device!) has internet access, it will show a list of all software releases with links to binary files.

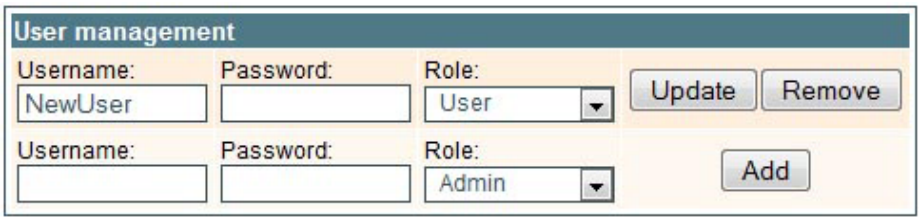


Picture 18: Firmware upgrade and software revision history

Binary file can be downloaded and saved to computer (see picture 18). After that, use the firmware upgrade method as described above.

7.8.5 User management

User may change a password here. Length of password up to 16 symbols. Type current password and double enter new password to change it.
If logged in user has admin role, new users can be added on another table (see picture 19).



Picture 19: User management

Enter it's username, password, select a role and press „Add" button.
Only administrator (user with a role „admin") may manage other users.

7.8.6 Restore defaults

All parameters will be restored back to factory defaults after confirmation. The exception – IP address and users – these parameters will be unchanged. To restore IP address and system password to system defaults, see „reset" button at section 3.
Several seconds can take to restore all parameters, so be patient.

7.8.7 Reset the device

Device will be restarted after confirmation to do it. This is an alternative to pressing a „reset" button when the device is operating.

7.8.8 Language

Device control panel supports several preinstalled languages. A change of language requires system restart. Note, that all previously logged records will remain in previous language.

Additional languages can be installed under request. Contact our distributors for such possibility.

This product complies with the relevant clauses of the European Directive 2002/96/EC. The unit must be recycled or discarded according to applicable local and national regulations.

Equipment intended for indoor usage only.

Equipment is double insulated from the mains.

Functional grounding. Connect to the main potential equalization.

TERRA confirms, that this product is in accordance to following norms of EU EMC norm EN50083-2, safety norm EN60065, RoHS norm EN50581.

TERRA confirms, that this product is in accordance to following norms of Russian Federation: EMC ГОСТ Р 51318.22-2006, ГОСТ Р 51318.24-99, ГОСТ Р 51317.3.2-2006, ГОСТ Р 51317.3.3-2008 and safety norm ГОСТ IEC 60950-1-2011.

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